CASE OF A FOREIGN BODY

IMPACTED IN THE ORIFICE

OF THE

THIRD BRANCH OF THE RIGHT BRONCHUS:

WITH REMARKS.

BY

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FELLOW OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND;
SURGEON TO THE WESTERN GENERAL DISPENSARY.

[*From Volume XXXIII of the 'Medico-Chirurgical Transactions,' published by the Royal Medical and Chirurgical Society of London.*]

LONDON:

PRINTED BY

C. AND J. ADLARD, BARTHOLOMEW CLOSE.

1850.

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Received September 2d.—Read November 13th, 1849.

The propriety of attempting the removal of a foreign body, when impacted in a bronchial tube, is a point in surgery upon which much difference of opinion prevails. On the one hand it is alleged, that the introduction of instruments within the air-passages is a difficult and dangerous proceeding; that there is much uncertainty, from the irritation to which they give rise, whether they can be successfully employed; and that as, in some instances, the offending substance has been loosened and ejected, it is more prudent not to interfere;—on the other it is urged, that if the natural powers fail in effecting so desirable a result, as its early expulsion from its situation, the symptoms which follow are usually so formidable, and the life of the patient is placed in such jeopardy, that in the absence of any special circumstances forbidding an operation, its extraction should be attempted.

However just the former opinion may be, it is unquestionable that the grounds upon which the latter is founded are so true, that it becomes a matter of the utmost importance

to decide the question. For this purpose, more extended experience, derived from individual cases, is necessary, as the only means of determining whether the dangers resulting from the efforts made to extract the foreign body, are greater than those to which the patient is exposed if it is allowed to remain undisturbed in its position, and the powers of Nature are trusted to for its expulsion. It is with this view that I venture to bring before the Society a case which has recently occurred at the Western General Dispensary.

The symptoms induced by the impaction of a foreign body in a bronchial tube differ materially from those which arise when it moves up and down in the air-passages during the act of respiration. In the latter case, the continued laryngeal irritation gives rise to repeated attacks of convulsive cough and threatened suffocation; in the former, these are not observed, but the symptoms are then referable to the impediment offered to the ingress and egress of the air on one side of the chest, to which succeed inflammation of the bronchial membrane, and of the parenchymatous tissue of the lung, entirely, or in part, and sometimes of the pleura itself.[1]

It is not my purpose, however, to enter into details of the symptoms occurring in such cases, which have been ably described in the writings of Porter, Stokes, and others; but I may briefly refer to the relative fatality which attends this accident when no surgical relief has been attempted, to the practicability of the operation, and to the success which has followed its accomplishment.

The fatality which ensues from a foreign body remaining in the air-passages, led Mr. Porter to remark, "that if not removed, it tends, sooner or later, to the one inevitable consequence—the destruction of the patient."[2] In looking over, however, the histories of published cases in which it was fixed in a bronchus, we find that in a small pro-

[1] Craigie's Pathological Anatomy, 2d edit., 1848, p. 589.

[2] Porter on the Surgical Pathology of the Larynx and Trachea, 1837, p. 190.

portion it was coughed out without having produced any very serious and irremediable mischief,[1] and a rare case is recorded by Royer Collard,[2] in which no thoracic disease appeared to have been induced. The patient, a lunatic in the Maison de Charenton, swallowed a piece of mutton bone. It gave rise to no symptoms indicative of affection of the respiratory organs, and on examining his body six years afterwards, no lesion whatever of the lungs or air-passages was discovered, though it was fixed in the bronchial tubes. Another case[3] is given by the same author, in which a nail remained in a bronchial tube, it was supposed, for two or three years, without the occurrence of any symptoms. The patient, however, died at last with cough, expectoration, and fever, after an illness of a fortnight. The nail was found in the left bronchus, partially oxidized, the lung was filled with tubercles, for the most part softened, and the bronchial membrane was thickened. In other cases on record, inflammation and suppuration took place, by which the foreign body was loosened and expelled, and even under this complication some patients recovered.[4] But such favorable results cannot be anticipated with any confidence. In by far the larger proportion of cases of this description which have been recorded, much suffering was endured, severe pulmonary inflammation was set up, and though life was in some instances prolonged for several years, the patients at last succumbed, worn out by the continued irritation and hectic, before or shortly after they were unburdened of the cause of their misery.[5]

[1] Browne on Tracheotomy; Edin. Med. and Surg. Journal, vol. xxx, p. 290.

[2] Nouvelle Bibliothèque Médicale, vol. i, Feb. 1826, pp. 196-200.

[3] Ibid.

[4] Browne on Tracheotomy. A case, by Mr. Nunn, in Prov. Med. and Surg. Journal, July 25. 1849, in which a "puff dart" had been fixed in the left bronchus, and was ejected with a quart of pus. Case by Mr. Travers, jun., in Med.-Chirurg. Transactions, vol. xxiii, 1840. Case by Dr. Craigie, in his Pathological Anatomy, 1848, p. 590.

[5] Browne on Tracheotomy; Craigie's Pathological Anatomy, 1848, p. 589.

In considering the question of opening the trachea, with the view of seizing the foreign body with forceps, and extracting it, many circumstances call for attention. When of small size and light weight, with a smooth surface and soft texture, it is less likely to cause inflammation, and there is more probability of its being coughed out, than if it happens to be of an opposite nature. Thus peas and beans, though lodged in a bronchus, may cause but little irritation, and, if dislodged, may rapidly traverse the trachea and larynx in a column of air during coughing, without causing much inconvenience; but it is far less probable, that a piece of bone, when impacted in the same situation, can be got rid of so readily. Its rough surface and irregular shape, besides lessening the probability of its being loosened, render it liable to be arrested in its transit, when instant suffocation might be the consequence.

The nature of the offending substance, then, forms a very necessary inquiry before determining upon the operation, no less than the age of the patient, and the previous state of his health. In young children, the small size and delicate structure of the parts to be interfered with, may prevent the possibility of its being effected; and in older persons, who have suffered from diseased lungs or other exhausting maladies, the prospect of a successful issue may be so slight as to forbid such a proceeding. Neither of these objections, however, apply to the case of a healthy adult; and it may be well, therefore, to endeavour, without delay, to rid him of such a fruitful source of danger.

In support of the practicability of the operation, it is sufficient to refer to the two cases mentioned by the late Mr. Liston, in his 'Practical Surgery,'—the only instances, as far as I am aware, on record, in which it was successfully accomplished. In the one, a piece of mutton bone was removed by himself from the right bronchus of a woman 37 years of age, six months after the occurrence of the accident; and in the other, a bell-button was extracted by Mr. Dickin, of Middleton, from the same situation, in a boy 8 years of age, ten days after its entrance. In neither case

was the proceeding attended with much difficulty, and the patients recovered.[1]

We have, however, high authority for stating that, in some cases, serious and insurmountable obstacles do present themselves to the completion of the operation. In the case recorded by Sir Benjamin Brodie, in the 26th volume of the Transactions of this Society, though attempts were made on two separate occasions to extract a coin from the right bronchus, through an opening in the trachea, the convulsive cough was so great on the introduction of the forceps, that it could not be felt, and it became necessary to desist. The same occurred in a case lately published by Mr. Solly,[2] and a similar one is mentioned by Mr. Porter, as having occurred in the person of a boy 5 years of age, in whose right bronchus a bean had lodged. Several attempts were made to remove it, but without success. The presence of the forceps in the trachea produced the most intense distress, and the operation was abandoned. The bean was afterwards moved by a probe, and coughed out through the wound.[3]

Another argument which may be brought forward against the operation, is the difficulty of determining the exact position of the foreign body. This is undoubtedly attended with much uncertainty, and it becomes a matter of great moment to decide the question as to the nature of the evidence upon which the attempt to extract it would be justified. The auscultatory signs, though open to fallacy from the existence of previous disease in the lungs, are the chief guides. In the case now to be related, a persistent expiratory sound, at first a "cooing rhonchus," and degenerating into a peculiar "whiff" or "puff," heard most clearly over the right bronchus, together with the pain experienced in that situation, and the consequent voluntary efforts made by the patient to expel it from thence, were the symptoms

[1] Liston's Practical Surgery, 4th edit., chap. xi.

[2] Medical Times, vol. xix, p. 557.

[3] Porter on the Surgical Pathology of the Larynx and Trachea, 1837, p. 218.

upon which the chief reliance was placed as indicative of its presence.

Supposing, then, the diagnosis to be as clearly established as it can be under such circumstances, and from the alleged nature of the foreign body, there is small probability of its being ejected, I cannot help feeling that an early attempt might be made to extract it by the usual mode. Although on the first trial it may not be possible to seize or even to feel it, a second may be more successful, and if it cannot be extracted, it may be displaced sufficiently to allow of its expulsion, as occurred in Mr. Porter's case already quoted. But suppose, as has happened, every effort to remove it should fail, further experience is wanted to prove that the operation itself is attended with that amount of risk which would warrant the surgeon in depriving the patient of the prospect which it affords of immediate and, most probably, permanent relief. It is the opinion of Sir Benjamin Brodie, that under all circumstances the trachea should be opened,[1] and Dr. Mason Warren, of Boston, states, "that if a case of the kind occurred to him, he should at once perform the operation of tracheotomy, and by a free use of ether, attempt to allay the irritability of the air-passages, so as to allow a more easy exploration by instruments than is generally afforded in the natural state." He admits at the same time, that the judgment of the surgeon must be determined by the circumstances of the particular case.[2]

I feel, however, considerable diffidence in advocating the operation in the presence of those so much better entitled to form a just opinion of its merits, and who, from the difficulties which attend the diagnosis, the irritation produced by the forceps, the injury which may be inflicted by them, and the uncertainty of being able to grasp and extract the foreign body, deem it more prudent to abstain from surgical interference.

Case.—Mrs. W., æt. 46, of pale complexion and thin

[1] Med.-Chirurg. Transactions, vol. xxvi, p. 297.

[2] Vide Boston Medical and Surgical Journal, Dec. 1847.

person, applied at the Western General Dispensary on the 11th of May, 1849, stating that on the previous day, at 2 p.m., whilst eating some broth, a piece of solid matter, which she believed to have been "bone covered with gristle," passed into the windpipe. She was immediately seized with spasmodic cough and threatened suffocation; "her face became black, and water ran from her mouth," and it was some minutes before she recovered herself. She fancied that at first she felt it sticking across the windpipe, but that she squeezed it lower down with her fingers. Soon after the accident happened, a probang was passed into the stomach, but no obstruction was found.

The following was her state at 2 p.m. on the 11th of May. —Her voice was hoarse, the respiratory movements were slow (not averaging more than 10 or 12 per minute), and accompanied with a wheezing noise; and she was distressed by a constant short cough, aggravated by full inspiration. There was pain at the upper part of the chest, which she referred to the junction of the second rib with the sternum, and at the back of the neck. Pulse 84; tongue rather furred. The expression was somewhat anxious, but there was no lividity or suffusion of the face. The symptoms were increased by exertion, or by lying on the right side. There had been no shivering, nor any return of the suffocative cough.

On ausculting the chest, a marked difference was found to exist between the two sides. On the right, the breath-sound was obscured, the natural vesicular murmur being scarcely perceptible, and a "prolonged and peculiar rhonchus" was heard throughout the lung, but most distinctly over the point to which the pain was referred, and was more audibly marked during expiration. On the left side the respiratory sounds were feeble, but free from rhonchus, and both inspiration and expiration were lengthened.

An inquiry into the previous state of her health, elicited that she had been subject to "pain in the right side, and to tightness in the chest;" but that she had never suffered from cough or expectoration.

These symptoms, and the previous history of the case, led my colleagues, Dr. M'Intyre, Dr. Hennen, and Dr. Miller, to agree with me in opinion as to the presence of a foreign body in the air-passages, and that its probable situation was in or near the right bronchus.

Eight leeches were applied to the chest, and a saline mixture with antimony ordered to be taken at intervals.

On the 12th, the report was that she had passed a restless night from constant hacking, dry cough, which was immediately brought on by any effort. The pain had been relieved by the leeches, which bled freely. She had no sickness or dysphagia.

On carefully examining the chest, the right side was observed to rise less during inspiration than the left; the respiratory sounds were audible, though still obscured; and posteriorly there was some dullness on percussion, whilst under the clavicle the usual clear sound was elicited. Some wheezing sounds were present, and expiration was attended with a "snoring rhonchus," which varied somewhat in character at different times.

In the evening she had a severe shivering fit, which lasted an hour and a half, followed by heat of skin and pain in the back. At half-past seven the pulse was 114, easily compressed. The tongue was dryish, and she complained of some thirst. The sound with expiration had now more of a "cooing" character.

13th. She slept three hours in the night. Slight expectoration of frothy mucus free from odour, and not tinged by blood. Complains of some pricking pains under the left clavicle, and in the right hypochondrium. Pulse 96. Skin cool. No lividity of countenance. She is sensible that the "cooing sound" proceeds from the right side of the chest, and she makes continual efforts, by coughing, to remove the bone, which she believes to be situated in the same situation to which she first referred the pain. She was threatened with another shivering fit in the evening, but kept it off by hot bottles applied to the feet. Some tincture of hyoscyamus was substituted for the antimony in her saline mixture.

14th. Slept three hours, but awoke with tickling in the throat, owing, she thinks, to accumulation of mucus. The cough has been incessant, with mucus expectoration. Pulse 108. The auscultatory signs the same. In the afternoon she was visited by Dr. M'Intyre, Mr. Arnott, Mr. Anderson, and myself. We then found that since the morning she had been more tranquil, that the wheezing and dyspnœa were less, though her respirations were 40 per minute, that the expectoration was moderate, and, upon the whole, that she was less distressed. This favorable change led to the supposition that the foreign body might have somewhat altered its position, so as to cause less irritation, and to offer less obstruction to the respiration. On the following grounds it was agreed that the operation should not then be performed, though the possibility of its becoming necessary at a future time, from the existence of more urgent symptoms, was admitted.

1st. There was a doubt as to the nature of the offending substance. If gristle, it might be softened and coughed up, and would necessarily give rise to less irritation and mischief than bone.

2dly. The clear sound on percussion under the clavicle, and the fact of respiratory sounds being heard there, did not indicate any great amount of obstruction to the entrance of air into the lung: and—

3dly. Though a peculiar rhonchus was heard over the right bronchus, its weight, as an adverse symptom, was materially diminished by the comparatively free respiration in the upper part of the lung. (This apparent inconsistency was fully explained by the position of the foreign body as discovered after death.)

On the 16th, the "cooing sound" had degenerated into a peculiar "whiff" or "puff," heard as before, during expiration. The expectoration was more copious and diffluent, though still mucous and frothy. The cough was at once brought on by any exertion or slight excitement, such as would be caused by the unexpected entrance of a person into the room. Fearful of the effects of this continued irritation

on the structure of the lung, and perhaps on the patient's life, Mr. Arnott's assistance was again sought; and on the 17th, he met Dr. Miller, Mr. Anderson, and myself in consultation. Owing, however, to the uncertainty which was felt in fixing on the exact position of the foreign body, and the consequent doubt as to the possibility of being able to grasp it in the forceps, and the symptoms not being of that urgent nature which called for immediate interference, it was considered inexpedient to undertake an operation.

On the 18th, I found her in the afternoon complaining of much pain in the throat and "all over her," with the skin hot, the pulse 132, and the respirations 48 per minute. A blister, which had been applied the day before under the right clavicle, had given her some relief. In consultation with Drs. M'Intyre and Miller, the following mixture was prescribed:—

℞ Liq. ammon. acet., ℥iss;
Decoct. senegæ, ℥vj;
Tinct. hyoscyami, ℥ij.
M. Sumat cochl. ij ampla 4tâ quâque horâ.

May 18th to June 1st. But, not to weary the Society with daily details, I may briefly state that for the following fortnight her symptoms were—disturbed nights, paroxysms of fever occurring almost daily, and generally in the afternoon; profuse night-sweats, general pains, probably from coughing and her own efforts to expel the foreign body. The cough assumed a more paroxysmal character, and was aggravated by any change of position. It was especially violent on first awaking, owing to accumulation of mucus, for on this being expectorated, she obtained temporary relief. She was much distressed also by retching and vomiting when the cough was violent. Her respirations varied from 36 to 40 per minute, and her pulse from 96 to 120. Her urine was high coloured and loaded with lithates, and her bowels acted generally without medicine. The auscultatory signs for this period were more or less dullness on percussion on the right side of the chest posteriorly, whilst under the clavicle a clear sound was given out. Here also the respiratory

murmur was free, whilst posteriorly it was less distinct with increased resonance of the voice. The "expiratory puff" over the right bronchus continued.

The left lung appeared to be free from disease, as far as could be recognised by the ordinary means.

During this period the same plan of treatment was continued, with the addition of a linctus for the cough, and her strength was supported as much as possible by light nutritious diet.

On the 1st of June the symptoms were aggravated; the expectoration was more copious, amounting to a teacupful in the day; but it maintained its frothy, mucous character. She suffered also from general tremor and agitation, with spasmodic action of the diaphragm, as though she were suppressing a cough.

The medicine was now changed as follows:—

℞ Acid. sulph. dilut., ʒiss;
Decoct. senegæ, ℥vij;
Syrup. papav.,
Syrup. tolut., āā ʒss.
M. Sumat cochl. ij ampla ter. quotidie.

From this date to the 21st of June, the symptoms underwent considerable remission. On the 8th the pulse was but 80; she had less fever; and was able to sit up in bed and do some work. Her tongue was clean; her cough on the whole less troublesome; and her strength improved. The "expiratory puff" continued, and she expressed her conviction that the foreign body had not undergone any change of position. She was now allowed a little wine, and on the 17th some quinine was prescribed for her.

On the 22d of June, after some increase in her distress, the expectorated matter first began to assume a change in appearance. It acquired a dingy colour, with some disagreeable odour; and on the 24th, she spat up two teacupfuls of offensive purulent matter, of a pale brownish colour. This was accompanied with great general depression; her pulse was 140, and weak; her respiration hurried and catching; and she complained of severe spasmodic pain, extending from

the ensiform cartilage under the right mamma towards the back, and a burning pain up the centre of the sternum. Her complexion now assumed a sallowish hue.

The following mixture was ordered :—

℞ Potassæ tartratis, ʒiss ;
Aquæ puræ, ℥viij ;
Sp. æther. sulph. comp., ʒij ;
Liq. opii sedat., ♏xl.
M. Sumat cochl. ij ampla 4tâ quâque horâ.

And she was directed to take occasionally a wine-glassful of a solution of chlorate of potash, in the proportion of two drachms of the salt to a pint of water, as a drink.

On the 25th, her pulse was 136, her respirations 44 per minute, and her skin hot. The purulent matter was freely expectorated in considerable quantity, and its odour was most offensive, so as to necessitate the constant use of chloride of lime in the room. The lateral measurements of the chest were equal.

The prescription was again altered :—

℞ Acid. sulph. dilut., ʒiss ;
Decoct. cinchonæ, ℥viij.
M. Sumat cochl. ij ampla ter. quotidie.

From this time to the date of her death she never rallied, and her sufferings were most intense from the violence of the cough and the urgent dyspnœa. Aphthous eruptions appeared on the tongue and mucous membrane of the mouth, which prevented her from taking medicine, or even nourishment, for some days. She was only able to sip small quantities of milk or brandy and water. She could obtain no ease but in the erect posture, in which she was supported with pillows. The violence of the cough, and the offensive odour of the purulent matter which she expectorated, induced retching and vomiting, which added to her distress and exhaustion. Her nights were passed sitting up in the bed, with scarcely any rest, and at times extreme restlessness. Her brain, however, remained unaffected ; and her lips were not livid, though the face gradually put on a waxy, death-

like appearance. The chief auscultatory signs now were loud mucus râles, and dullness on percussion over the right side of the chest, with blowing respiration in parts. These were, however, less marked under the right clavicle, the air appearing to enter with more freedom into the upper part of the lung than elsewhere.

In this state she continued till the 5th of July, when I found her lying in the horizontal posture in her bed, unable to speak; and her death, which had been daily expected for a week, took place at midnight.

Sectio Cadaveris, 16 *hours p. m.*—Present Messrs. Arnott, Shaw, De Morgan, and Anderson, Dr. Miller, Mr. Palmer, and myself. The following report is drawn up from notes taken at the time by Dr. Miller, and the accompanying drawing by Mr. William Wing gives a correct representation of the appearances observed.[1]

Body much emaciated. Decomposition commencing.—The intercostal muscles in front of the chest on the right side were much darkened, and contrasted strongly with those on the opposite side, which were of the usual florid colour. On exposing the trachea and great vessels in the neck, the right carotid artery was observed to pursue an abnormal course, running obliquely upwards and to the right side in front of the trachea, from a point a little to the right of the left sterno-clavicular articulation; when the sternum was removed, this was found to depend on the innominata artery arising somewhat to the left of its usual point of origin, and taking a more perpendicular course than it ordinarily does, and dividing early into its two branches. The distance from the lower border of the thyroid body to the upper edge of the carotid artery, taken upon a line drawn perpendicularly through the centre of the trachea, was one inch, and this was increased half an inch by continuing the measurement to the top of the sternum. Both the arch of the aorta and the innominata artery appeared to bulge more than usual.

The right lung was seen well filling its own side of the

[1] The preparation is deposited in the Museum of the Royal College of Surgeons.

chest, and in its inferior two thirds was adherent to the ribs and diaphragm respectively; and close upon the latter, in front, there was a pleuritic abscess, the size of the palm of the hand. The left lung appeared somewhat collapsed.

The veins were now tied and divided, and with the large arteries turned back, so as to expose the anterior surface of the trachea and bronchi. The course of the trachea and right bronchus was an oblique curve, deviating but little from the perpendicular, bearing from the upper border of the sternum downwards to the right of the middle line. The left bronchus went off more abruptly. The trachea and right bronchus were now slit up in their whole extent, and found to contain a thin muco-purulent secretion of a pale slate colour. In the latter, at the distance of an inch and a half from the point of bifurcation of the trachea, and five inches and a half from the lower border of the thyroid body, a small piece of bone, weighing, when dry, $3\frac{1}{2}$ grains, was found, having a concave smooth facet, and a convex rough one, and one very sharp edge, its breadth being three eighths, and its length a quarter of an inch. It was firmly impacted in the orifice of the third branch, given off from the bronchus, which passed into the middle lobe,[1] and this accounted for the comparative freedom with which the air appeared to enter the upper part of the lung throughout the case, as evidenced by the auscultatory signs. The mucous membrane around it was of a vivid red colour, and highly injected, but gradually became paler towards the left bronchus, where, as well as in the trachea, it presented its usual colour.

The lower two thirds of the right lung were of an ashy slate colour, of dense consistence, very offensive odour, and infiltrated with a purulent fluid. Small portions of it sunk in water, and when washed it had much the appearance of coarse dark sponge, though no distinct cavities containing pus were visible.

That part of the upper lobe which was not adherent to

[1] The course of this branch of the right bronchus is marked in the drawing by a bristle inserted into it.

the side of the chest, and which was supplied with air by the first branch of the right bronchus, contained air, and the upper portion of it appeared healthy.

The left lung contained no trace of tubercle, and was perfectly healthy.

The heart was large, and slightly ~~distended~~ to the left.

The liver was large, but healthy in structure, and extended into the left hypochondriac region.

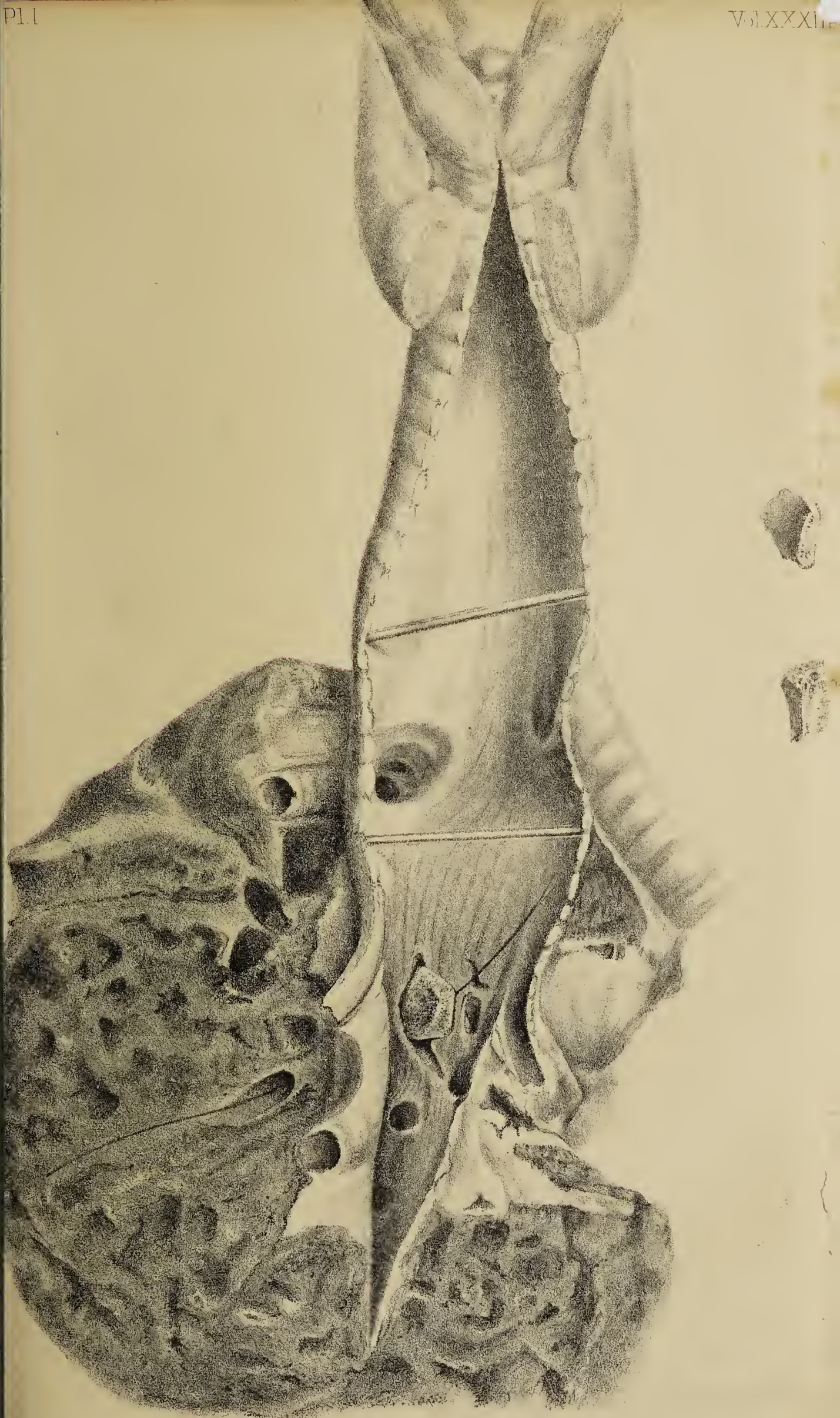
Before concluding this paper, I cannot refrain from adverting to a case published by Dr. Gilroy, in the 35th volume of the 'Edinburgh Medical and Surgical Journal,' the history of which so exactly corresponds with that just detailed, as fairly to admit of comparison with it. In both the symptoms underwent a temporary lull, the cough was brought on by any exertion, and the purulent sputa possessed the same fetid odour. Dr. Gilroy's patient survived nearly three months, and after death a large pulmonary abscess was found communicating with a bronchus, in which a piece of chicken bone, weighing 6 grains, was lodged. Mrs. W. lived but two months, and instead of an abscess the lung was found infiltrated with pus. Both cases attest the sufferings and fatality which usually follow this accident, neither of which could have been prevented by any other means short of the removal of the foreign body. No good result could have been anticipated by the plan of inverting the body, as practised in Sir Benjamin Brodie's case, for it could not have been expected that the weight of the pieces of bone could have had any effect in altering their position when the violent cough had failed to do it.

In the case of Mrs. W., it was, from causes which I have mentioned, judged inexpedient to attempt the extraction of the foreign body with forceps after opening the trachea, but possibly a greater amount of experience might have modified this opinion. It is certain, however, that had it been attempted, some difficulty would have arisen from the depth to which the piece of bone had penetrated, being at least four inches from the top of the sternum. Two bronchial

branches had been passed by it, into the first of which, from its size, it is more than probable, that the point of the forceps would have entered, and this might have given rise to such distress as to have baffled any further proceedings.

The proximity of the right carotid artery to the seat of incision would have exposed it to injury. With due caution it would not, probably, have been wounded by the knife, but it might have been bruised and injured by the forceps. Though such a deviation from its course could not be looked for in other patients, it nevertheless deserves attention, and fully bears out the remark of Mr. South, "that the varieties of the vessels in the neck render a careful inspection necessary before proceeding to the operation." [1]

[1] Vide Chelius's Surgery, by South, article Tracheotomy.



Tuson, d.

Ford & George, lithographers, 5th, Haverstock Hill.